

PATENT
Atty. Dkt. No. AVIS/1016CREMARKS

This is intended as a full and complete response to the Office Action dated February 26, 2002, having a shortened statutory period for response set to expire on May 26, 2002. Claims 4-59 are pending in the application and stand rejected. Applicants have cancelled claims 17, 32, 39, 44, and 54 without prejudice. Applicants have also proposed amendments to the claims to more clearly recite aspects of the invention and to correct matters of form. Please reconsider the claims for reasons discussed below.

Claims 4, 5, 10, 11, 12, 14-16 and 22 stand rejected under 35 U.S.C. § 102(b) as being anticipated by *Habiby et al.* (U.S. Patent No. 4,021,333). The Examiner states that "*Habiby et al.* teaches a process for purifying used oil including the use of a glycol and dimethylformamide". The Examiner also states that *Habiby et al.* "teaches a step wherein a base is added to the used oil."

Applicants respectfully traverse. *Habiby et al.* discloses a method of distilling used oil to recover a distillate having a certain viscosity and then extracting impurities from the distillate. The extraction is a liquid to liquid extraction process employing an inert extractant. (See *Habiby et al.* at col. 2, lines 44-68). *Habiby et al.* also teaches "a preliminary step of adding a diluent to said oil and removing (e.g. by filtration or centrifugation) insoluble impurities from the solution of said oil in said diluent." The diluents are "an organic liquid in which the oil is soluble". (See *Habiby et al.* at col. 3, lines 36-45). *Habiby et al.* further teaches "heating the used oil with an aqueous solution of a strongly alkaline material prior to the addition of the diluent". (See *Habiby et al.* at col. 3, lines 58-60). *Habiby et al.* does not teach, show, or suggest mixing the used oil with a phase transfer catalyst in the presence of a base compound, as recited in claim 4, as amended, as well as the claims dependent therefrom. Accordingly, withdrawal of the rejection and allowance of the claims is respectfully requested.

Claims 4-59 stand rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-14 of U.S. Patent No. 6,319,394. Applicants wish to postpone submission of a terminal disclaimer until patentable subject matter is identified. At that time, should an obviousness type double

PATENT

Atty. Dkt. No. AVIS/1016C

patenting rejection apply to the allowable subject matter, Applicants will then offer a terminal disclaimer.

The prior art made of record is noted. However, it is believed that the secondary references are no more pertinent to the Applicants' disclosure than the primary references cited in the office action. Therefore, it is believed that a detailed discussion of the secondary references is not deemed necessary for a full and complete response to this office action. Accordingly, allowance of the claims is respectfully requested.

In conclusion, the references cited by the Examiner, neither alone nor in combination, teach, show, or suggest the claimed invention. Having addressed all issues set out in the office action, applicants respectfully submit that the claims are in condition for allowance and respectfully request that the claims be allowed.

Respectfully submitted,



Robb D. Edmonds
Registration No. 46,681
MOSER, PATTERSON & SHERIDAN, L.L.P.
3040 Post Oak Blvd., Suite 1500
Houston, TX 77056
Telephone: (713) 623-4844
Facsimile: (713) 623-4846
Attorney for Applicant(s)

PATENT

Atty. Dkt. No. AVIS/1016C

APPENDIX

4. (Amended) A method for purifying motor oil, comprising:
mixing the motor oil with a phase transfer catalyst in the presence of a base compound;
mixing the motor oil with a solvent to dissolve contaminants from the motor oil into the solvent; and then
separating the solvent from the motor oil.
5. (Amended) The method of claim 4, wherein the phase transfer catalyst comprises quaternary ammonium salts, polyol ethers, glycols, or crown ethers.
6. (Amended) The method of claim 4, wherein the phase transfer catalyst comprises ethylene glycol.
7. (Amended) The method of claim 4, further comprising removing contaminants [wherein removing contaminants] from the motor oil [comprises] by distilling the motor oil at a temperature of about 200°C to about 275°C and a pressure of about 100 torr to about 200 torr.
8. (Amended) The method of claim 4, further comprising removing contaminants [wherein removing contaminants] from the motor oil [comprises] by distilling the motor oil at a temperature of about 275°C to about 300°C and a pressure of about 0.05 torr to about 0.2 torr.
9. (Amended) The method of claim 4, further comprising removing contaminants [wherein removing contaminants] from the motor oil [comprises] by distilling the motor oil at a temperature of about 200°C to about 300°C and a pressure of about 0.05 torr to about 200 torr.

PATENT

Atty. Dkt. No. AVIS/1016C

11. (Amended) The method of claim [10] 4, wherein the base compound is an inorganic or organic base compound.
13. (Amended) The method of claim 4, wherein a mixture of the motor oil and phase transfer catalyst comprises about 1 % to about 10 % by weight of the phase transfer catalyst.
15. (Amended) The method of claim 4, further comprising separating the contaminants from the solvent.
18. (Amended) The method of claim 4, wherein separating the solvent from the motor oil comprises extraction.
19. (Amended) The method of claim 4, wherein separating the solvent from the motor oil comprises flowing the solvent counter to the motor oil within means for extraction.
21. (Amended) The method of claim 4, wherein the solvent comprises N,N-dimethylformamide.
22. (Amended) The method of claim 4, wherein the solvent is a polar organic compound.
23. (Amended) A method for removing contaminants from a petroleum distillate, comprising:
mixing the petroleum distillate with ethylene glycol in the presence of a base compound;
mixing the petroleum distillate with a solvent to dissolve contaminants from the motor oil into the solvent; and then
separating the solvent from the petroleum distillate.

PATENT
Atty. Dkt. No. AVIS/1016C

25. (Amended) The method of claim 23, wherein [removing contaminants] separating the solvent from the petroleum distillate comprises distilling the petroleum distillate at a temperature of about 200°C to about 275°C and a pressure of about 100 torr to about 200 torr.
26. (Amended) The method of claim 23, wherein [removing contaminants] separating the solvent from the petroleum distillate comprises distilling the petroleum distillate at a temperature of about 275°C to about 300°C and a pressure of about 0.05 torr to about 0.2 torr.
27. (Amended) The method of claim 23, wherein [removing contaminants] separating the solvent from the petroleum distillate comprises distilling the petroleum distillate at a temperature of about 200°C to about 300°C and a pressure of about 0.05 torr to about 200 torr.
31. (Amended) The method of claim [27] 30, further comprising recycling the solvent.
34. (Amended) The method of claim 23, wherein separating the solvent from the petroleum distillate comprises flowing the solvent counter to the [motor oil] petroleum distillate within means for extraction.
35. (Amended) The method of claim [24] 34 wherein means for extraction comprises a mixer, agitated column, non-agitated column, and Karr column.
38. (Amended) A method for removing contaminants from motor oil, comprising:
mixing the motor oil with ethylene glycol in the presence of an inorganic base compound;

PATENT
Atty. Dkt. No. AVIS/1016C

mixing the motor oil with a solvent to dissolve contaminants from the motor oil into the solvent;

separating the solvent from the motor oil; and then

separating the contaminants from the solvent.

50. (Amended) A method for removing contaminants from motor oil, comprising:

[mixing the motor oil with an inorganic base compound;]

mixing the motor oil with a phase transfer catalyst in the presence of an inorganic base compound;

mixing the motor oil with N,N-dimethylformamide to dissolve contaminants from the motor oil into the solvent;

separating the N,N-dimethylformamide from the motor oil [, wherein separating the contaminants from N,N-dimethylformamide comprises distilling N,N-dimethylformamide at a temperature of about 200 °C to about 275 °C and a pressure of about 100 torr to about 200 torr]; and then

separating the contaminants from the solvent.